Lee Hall Reservoir
2008

This 230-acre reservoir is owned by the City of Newport News and forms part of the City's water supply network, receiving water from the Chickahominy River and Diascund and Little Creek Reservoirs. The reservoir is located in Newport News Park, which was opened for recreational activities in 1966. With a total area of about 8,000 acres, it is one of the largest municipal parks east of the Mississippi.

The Virginia Department of Game and Inland Fisheries conducted an electrofishing survey of Lee Hall Reservoir on April 6, 2007. The reservoir was last sampled on May 9, 2005. The 2007 sample consisted of shocking along 4 historical shoreline regions. The combination of these four sampling runs provides a picture of the present fish assemblage. The water temperature varied slightly from 17.3 to 17.6°C. Electrofishing efforts consisted of shocking along the shoreline habitat as close as possible, with the majority of the effort concentrated in the 2 to 4 foot depth range. The four sample runs were each 1,200 seconds long. A total effort of 4,800 seconds (80 minutes) of electrofishing collected 15 fish species.

Table 1. Summary of the primary fish species collected by electrofishing of Lee Hall Reservoir, April 6, 2007.

Species	# Collected	Largest Length	Average Length
Largemouth Bass	27	20.8"	14.6"
Bluegill	592	6"	3.5"
Yellow Perch	123	7.8"	4.6"
Pumpkinseed Sunfish	144	5.4"	3.7"
Redear Sunfish	123	8.6"	5"
Chain Pickerel	23	23.9"	16.2"
Black Crappie	5	9.6"	7.2"

The electrofishing sample did not produce many largemouth bass. A total of only 27 largemouth bass yielded a Catch Per Unit of Effort (CPUE) of 20.3 f/hr. This catch rate is well below the average CPUE for other public waters within the Region and is less than the 2005 sample (N = 32, CPUE = 24 f/hr). The two sample runs on the reservoir section west of I-64 produced 21 of the 27 bass. The best area sampled was along the flooded tree lines adjacent to the highway. This sample area, with all of its shallow water cover, produced 15 bass. The main reservoir section located to the east of I-64 produced a disappointing total of only 6 bass. The size distribution of the collected bass can be seen

on the enclosed length frequency histograms. The 2007 sample collected only 4 bass in the 6 to 7.5 inch range. Poor recruitment of largemouth bass was evident with the collection of only 5 bass less than 12 inches in length. The majority of this limited sample size consisted of bass in the 11 to 19 inch range. The average sized bass measured 14.6 inches. This is a respectable average length, but one must remember the small sample size and the fact that very few juvenile bass were collected. The largest bass measured 20.8 inches and weighed 5.3 pounds.

Figure 1: Length frequency distribution of largemouth bass collected from electrofishing Lee Hall Reservoir, April 6, 2007. (N = 27, CPUE = 20.3 f/h)

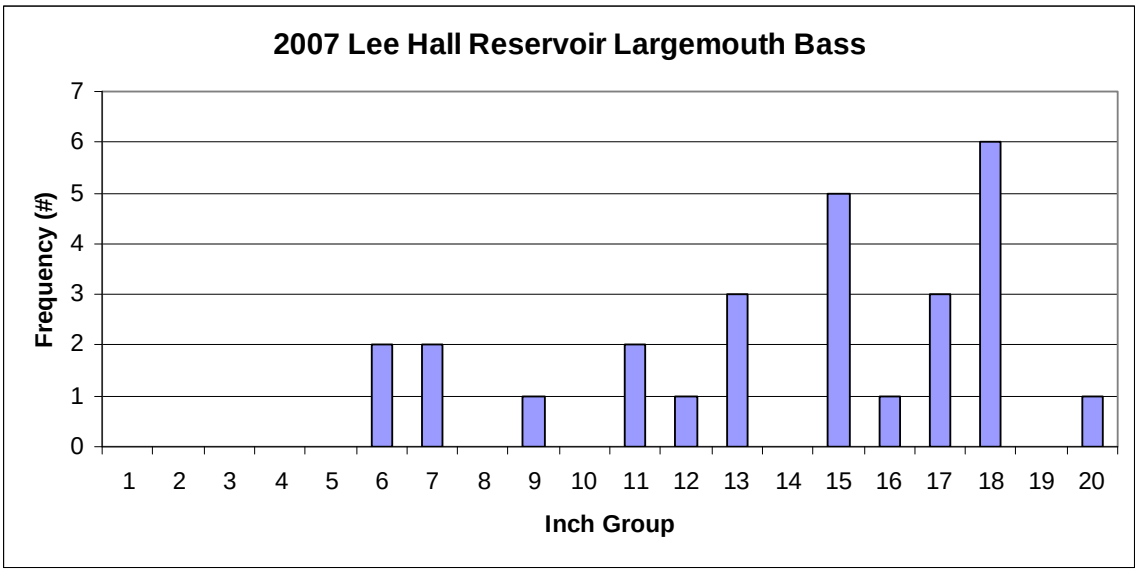
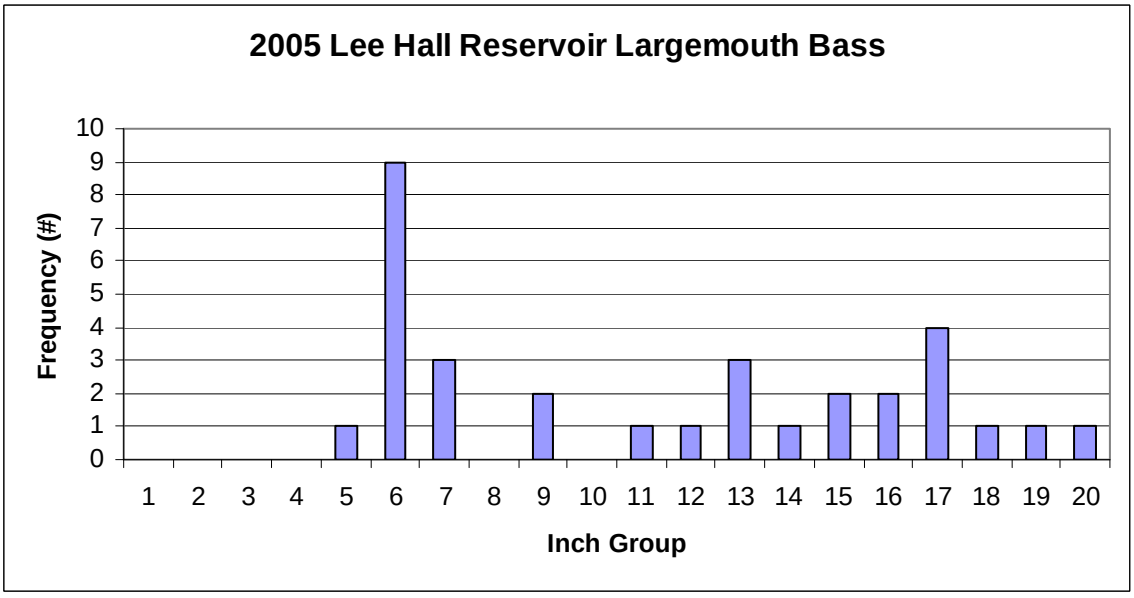


Figure 2: Length frequency distribution of largemouth bass collected from electrofishing Lee Hall Reservoir, May 9, 2005. (N = 32, CPUE = 24 f/h)



Fisheries biologists of the past established certain size classifications to describe the fish they collected. It is through these size classifications that population dynamics are analyzed. The size designations are stock, quality, preferred, memorable, and trophy. The PSD (Proportional Stock Density) is the proportion of bass in the population over 12 inches (quality size) in relation to the total number of stock-sized bass (8 inches and greater). A balanced bass/bluegill fishery has a bass PSD value within the 40 – 70 range. With largemouth bass being the most popular game fish in this country, it has been considered that a "preferred" bass is one that is over 15 inches in length. The RSD-P (Relative Stock Density of Preferred bass) is the proportion of stock-sized bass that are 15 inches or greater. The PSD and RSD-P values represent the distribution of collected fish, but one must take into account the total number of bass collected along with the total of stock-sized bass in the sample. The 2007 values for PSD (96) and RSD-P (70) were much higher than the 2005 values (PSD = 84, RSD-P = 58). The 2007 PSD value represents the collection of 23 stock-sized bass in which 22 of those bass were of quality-size (greater than 12 inches). A total of 16 preferred-sized bass were collected. These values are well above the desired ranges (PSD: 40 – 70, RSD-P: 10 – 40) that would represent a balanced bass population.

Weights were taken on largemouth bass to calculate relative weight values. Relative weight values are an indication of body condition. A value from 95 to 100 represents a fish that is in the healthy range and finding a decent amount of food. A higher relative weight value indicates fish with a better body condition. The relative weight values for stock, quality, preferred and memorable bass (>8", >12", >15" and >20") were 108, 108, 109 and 103 respectively. These values show an increase from the 2005 sample (100, 100, 98 and 92). The 2007 relative weight values are all well above the preferred range of 95 to 100. The abundance of yellow perch and small sunfish provides a sufficient forage base for the largemouth bass.

Lee Hall Reservoir bluegill population consists primarily of bluegills less than 6 inches in length. The electrofishing sample collected 592 bluegills (CPUE = 444 f/h) and showed a significant increase in catch rate from the 2005 sample (N = 127, CPUE = 95.3 f/h). The majority of the bluegills were in the 3 to 5 inch range. The average sized bluegill measured 3.5 inches. The largest bluegill measured only 6 inches. The bluegill PSD value of 0 showed a decrease from 2005 (PSD = 7) and falls well below the desired range of 20 – 60 that would represent a balanced population. The sample collected one quality-sized bluegill and an incredible total of 424 stock-sized bluegills. Bluegill growth rates are most likely feeling the pressure from direct competition from other sunfish species as well as the yellow perch population. The stunted nature of the bluegill population continues with every passing year. The limited numbers of predator fish species cannot effectively control the numbers of bluegill that are present. Mature bluegills will continue to spawn each year and the overall population will continue to grow. The size distributions of bluegills are presented on the length frequency histograms of figures 3 and 4. Due to excessive number of bluegills, a tick count of centimeter groups was taken during the measurements. The majority of the bluegills were within the 6 to 11 centimeter range (2.5 to 4.5 inch range).

Figure 3. Length distribution of bluegills collected from electrofishing Lee Hall Reservoir, April 6, 2007. (N = 592, CPUE = 444 f/h)

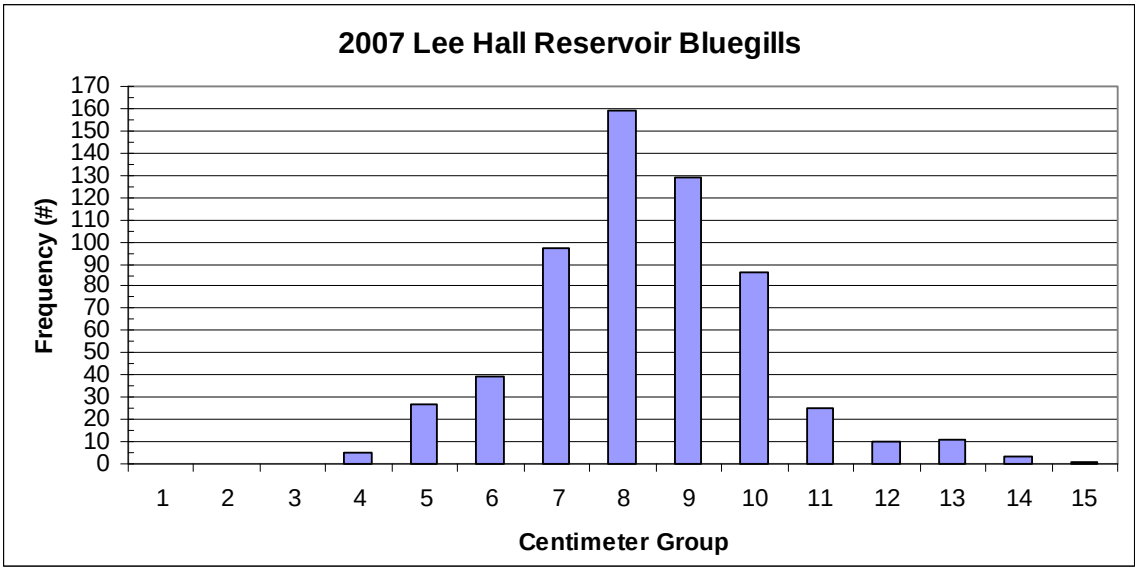
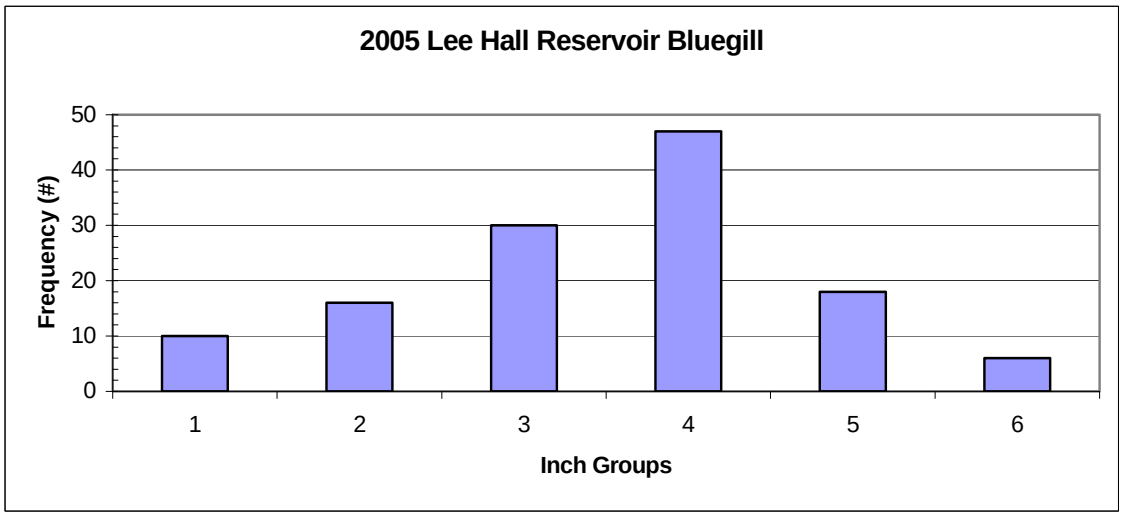


Figure 4. Length distribution of bluegills collected from electrofishing Lee Hall Reservoir, May 9, 2005. (N = 127, CPUE = 95.25 f/h)



The yellow perch population appears to be dominated by an abundance of small fish. The sample collected 123 yellow perch (CPUE = 92.3 f/h) and showed a decrease from 2005 (N = 155, CPUE = 116.3 f/h). The largest perch measured only 7.8 inches. The high number of juvenile yellow perch brought the average size down to 4.6 inches. The majority of the sample (N = 76, 62%) consisted of yellow perch in the 3 to 4 inch size group. The abundance of small yellow perch should provide a great forage base for the bass and chain pickerel.

Figure 5. Length distribution of yellow perch collected from electrofishing Lee Hall Reservoir, April 6, 2007. (N = 123, CPUE = 92.3 f/h)

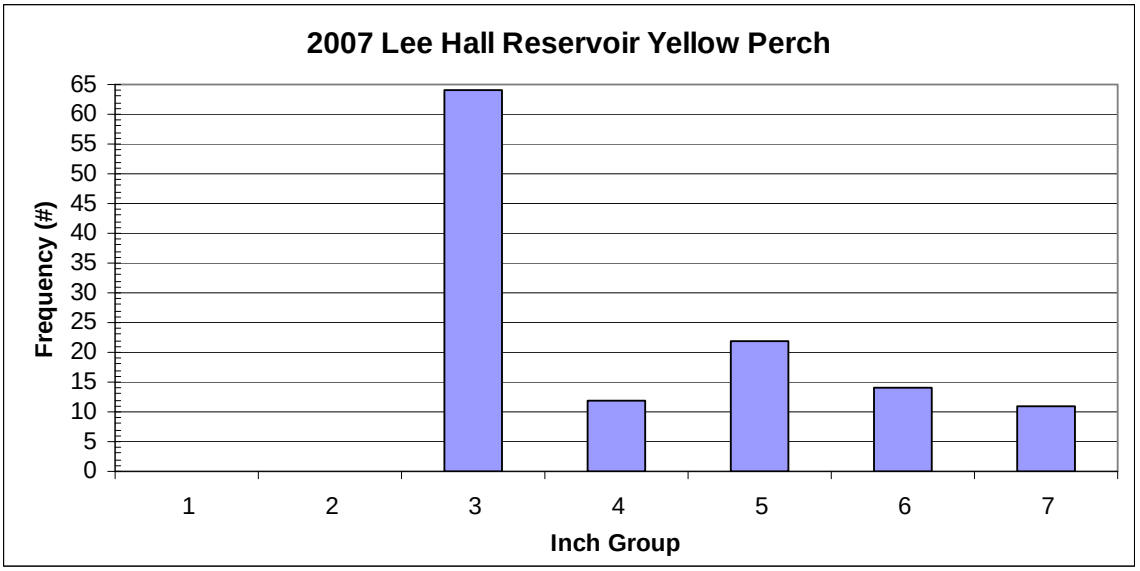
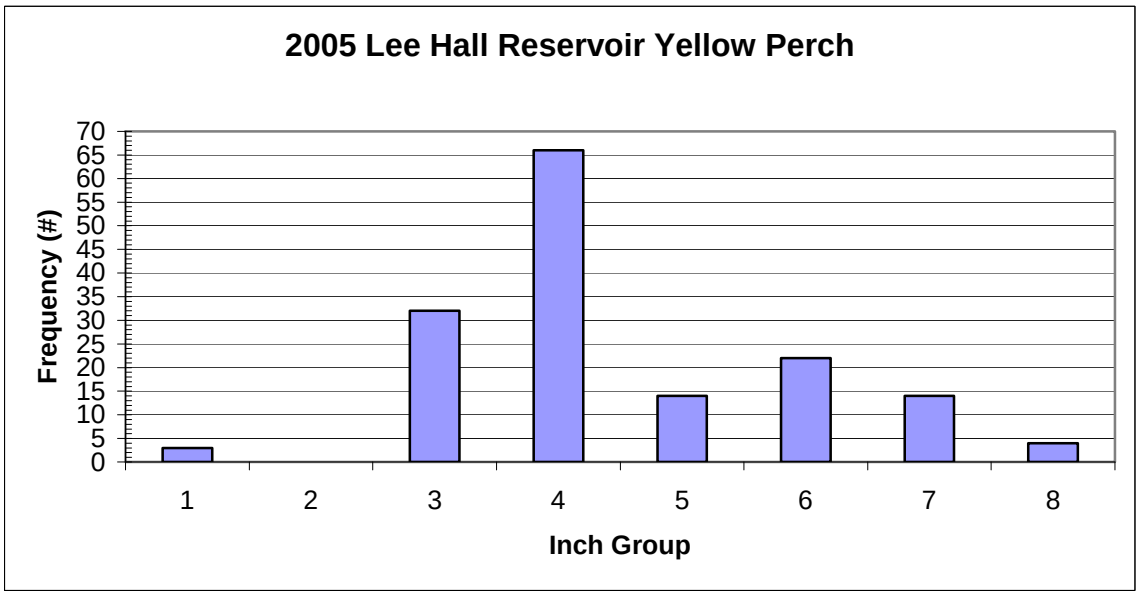


Figure 6. Length distribution of yellow perch collected from electrofishing Lee Hall Reservoir, May 9, 2005. (N = 155, CPUE = 116.25 f/h)



The pumpkinseed sunfish population appears to be comprised primarily of small fish in the 3 to 5 inch range. The sample collected 144 pumpkinseed sunfish (CPUE = 108 f/h) and showed a significant increase from the 2005 sample (N = 45, CPUE = 33.8). The pumpkinseed sunfish ranged in size from 2 to 5 inches with the average size pumpkinseed sunfish measured at 3.7 inches. The largest one measured only 5.4 inches.

Pumpkinseed sunfish are one of the more colorful sunfish species that tend to have a smaller size potential than other species like bluegills and redear sunfish.

Figure 7. Length distribution of pumpkinseed sunfish collected from electrofishing of Lee Hall Reservoir, April 6, 2007. (N = 144, CPUE = 108 f/h)

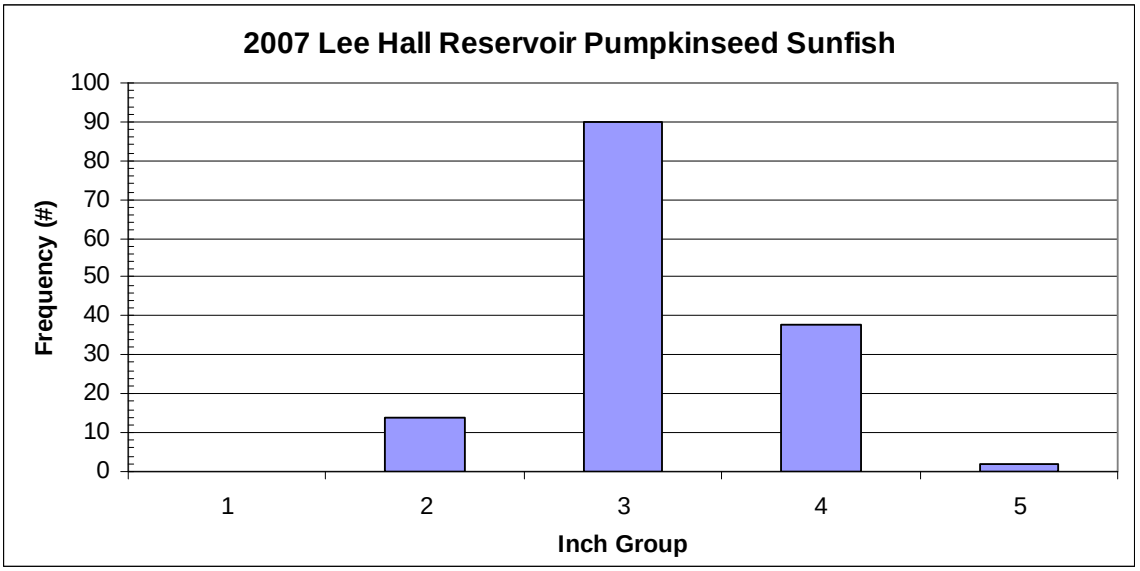
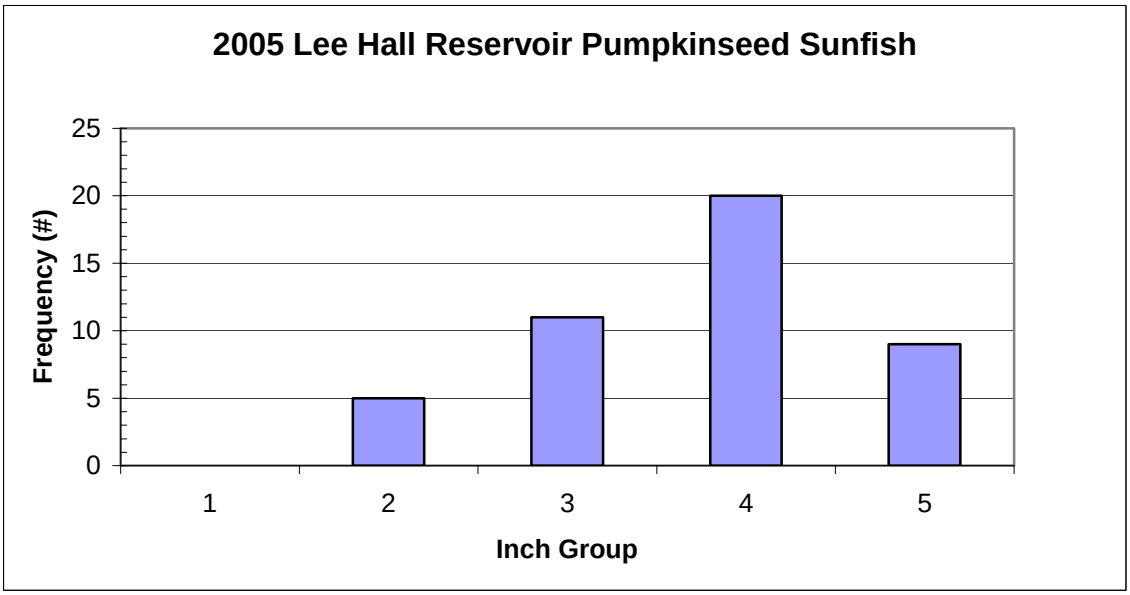


Figure 8. Length distribution of pumpkinseed sunfish collected from electrofishing of Lee Hall Reservoir, May 9, 2005. (N = 45, CPUE = 33.75 f/h)



The redear sunfish population appears to be in fair to decent shape with some larger fish present. The sample collected 123 redear sunfish (CPUE = 92.3 f/h) and showed a significant increase from the 2005 sample (N = 74, CPUE = 55.5 f/h). The majority of the sample consisted of redear sunfish in the 4 to 7 inch range. Due to the abundance of small redear sunfish, the average size was 5 inches in length. The largest redear sunfish measured an impressive 8.6 inches.

Figure 9. Length distribution of redear sunfish collected from electrofishing of Lee Hall Reservoir, April 6, 2007. (N = 123, CPUE = 92.3 f/h)

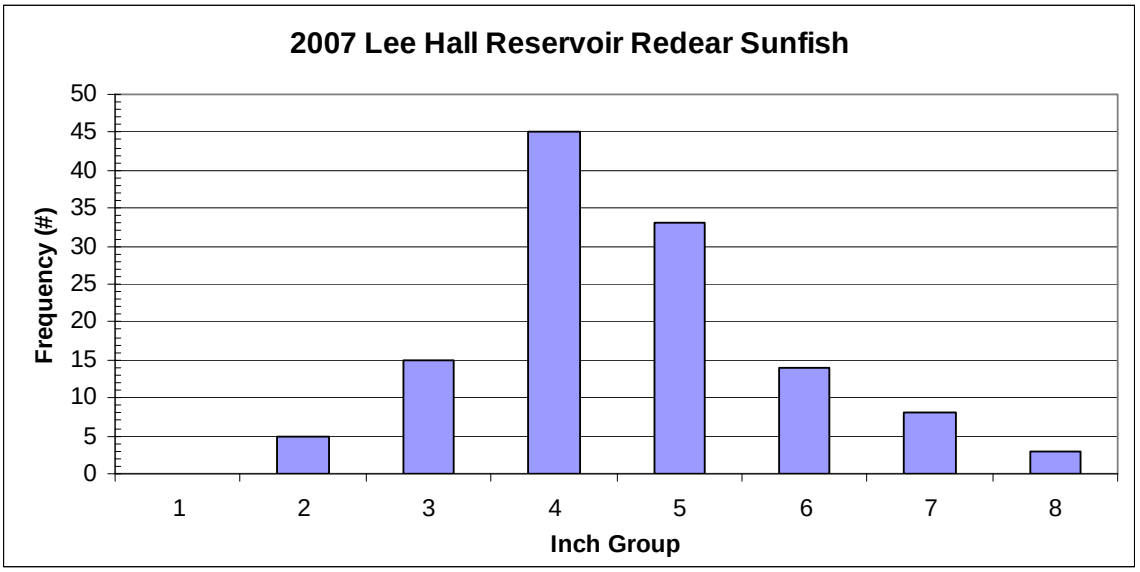
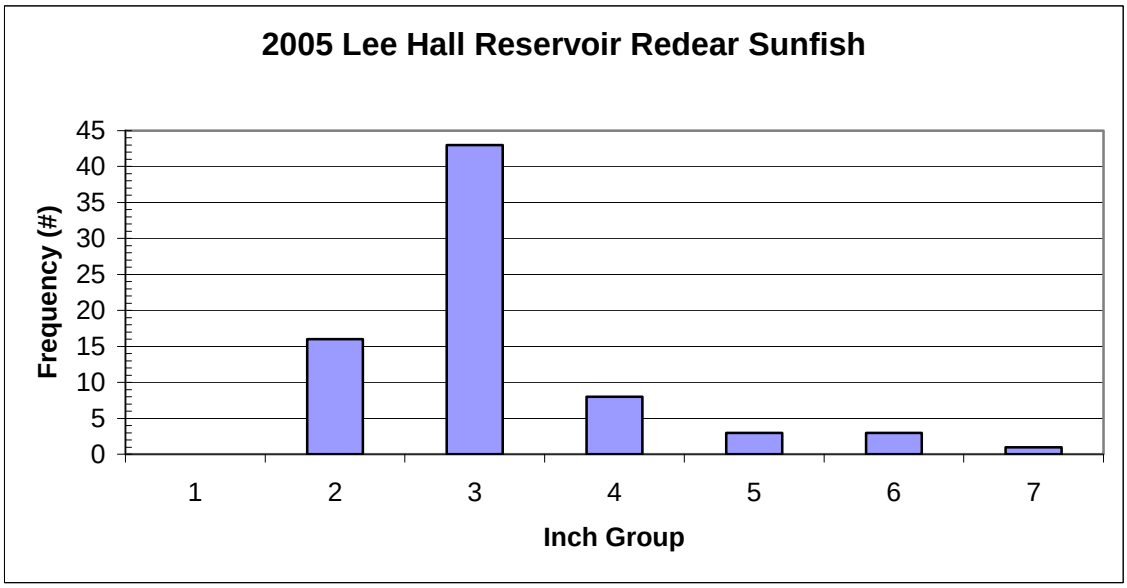


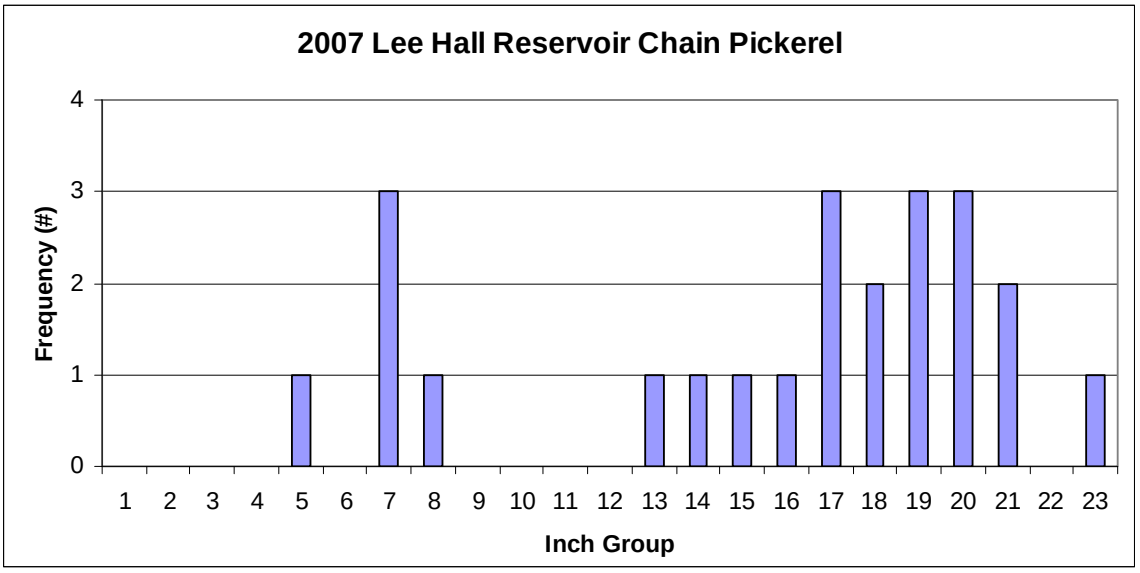
Figure 10. Length distribution of redear sunfish collected from electrofishing of Lee Hall Reservoir, May 9, 2005. (N = 74, CPUE = 55.5 f/h)



The electrofishing sample collected only 5 black crappies. This low catch rate is similar to the 2005 sample that collected only 4 crappies. The 2007 size distribution ranged from 4 to 9.5 inches in length. Black crappies tend to school up tightly in waters deeper than bass and bluegill. So the typical shoreline electrofishing run would miss the black crappies if they were holding in deeper water. The trap net survey conducted during the spring of 2005 revealed decent numbers of quality black crappies in the upper regions of the reservoir.

The electrofishing sample collected 23 chain pickerel for a CPUE of 17.3 f/h. This catch rate shows some improvement from the 2005 sample (N = 14, CPUE = 10.5 f/h). The 2005 sample showed the majority of chain pickerel to be less than 12 inches in length. The 2007 sample showed a different picture with an abundance of larger pickerel collected. The average sized chain pickerel in 2005 measured 8.76 inches and the largest pickerel measured 15.51 inches. The average sized chain pickerel in 2007 measured 16.2 inches with the largest one measured at 23.9 inches. The size distribution from the 2007 sample shows the high percentage of chain pickerel in the 17 to 21 inch range.

Figure 11. Length distribution of chain pickerel collected from electrofishing of Lee Hall Reservoir, April 6, 2007. (N = 23, CPUE = 17.3 f/h)



The 2007 electrofishing sample collected 15 fish species. The sample collected limited numbers of brown bullheads (2), creek chubsuckers (29), American eel (6), white perch (2), gizzard shad (1), golden shiners (5), bluespotted sunfish (2) and warmouth (7). These species of low abundance provide some diversity to the fishery and the chance of surprising an angler every once in a while.

Newport News Park rents boats from two locations on the reservoir. Boats can be rented year round from the Campsite office. Boats can be rented on weekends and holidays during the summer from the Lee Hall Fishing Area in the middle of the park. Private boats can be launched from this area as well. Additional boat ramps are located

near the campground area and off of Route 143. The access area off of Route 143 allows boat anglers to slide under the I-64 bridge and fish the section between the highway and the railroad tracks. The Park requires anglers to have a valid VA state fishing license and a park fishing permit. The pier fishing permit costs $1.50/day. The daily launch permit for a private boat costs $4 and the yearly permit costs $40. Further details can be obtained from the Newport News Department of Parks and Recreation at 757-886-7912.

Summary

The 2007 electrofishing survey of Lee Hall Reservoir showed a limited abundance of largemouth bass. A total of only 27 largemouth bass were collected over the 1.33 hours it took to complete the four sample sites. The catch rate of 20.3 bass/hr is very low even when compared to past sample years on Lee Hall Reservoir. Very few bass were less than 12 inches in length. The majority of collected bass were in the 13 to 18 inch range. The bluegill sample provided an abundance of fish with a total of 592 bluegills collected. The majority of these bluegills were in the 3 to 5 inch range. Only one 6 inch bluegill was collected. The yellow perch fishery is still rather abundant with the majority of perch less than 6 inches in length. The pumpkinseed sunfish population is similar to the bluegill population in that it is dominated by the presence of 3 to 4 inch fish. The redear sunfish showed a little more promise with a fair number of redear sunfish in the 6 to 8 inch range. The electrofishing survey had a difficult time in finding the schools of black crappies as only 5 crappies were collected. The chain pickerel sample showed an improvement from 2005 with a shift in length distribution from the smaller pickerel found in 2005 to the decent number of 16 to 21 inch fish found in 2007.

The DGIF listing of citations shows anglers did fairly well on Lee Hall Reservoir during 2007. A total of 27 citations were reported for 2007. These citations were for black crappie (17), chain pickerel (4), largemouth bass (2), channel catfish (2) and yellow perch (2). The citation lists proves that anglers that actively fish Lee Hall Reservoir have a decent chance in catching a variety of citations. The total of 17 citation black crappies is really impressive considering the small size (230 acres) of Lee Hall Reservoir. The 17 citation crappies puts Lee Hall Reservoir in 4th place for all state waters.